Health in adolescence

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9 Summary, General Discussion and Implications

In the previous six chapters of this thesis, we reported our empirical findings of the study of Health in Adolescence. In this final chapter, a summary will be given of the main findings and these findings will be discussed. This will be done, firstly, by considering some validity issues. Secondly, conclusions will be drawn and related to the conceptual model as depicted in Chapter 1. Finally, implications for future research and policy implications will be discussed.

Summary of the main findings of the empirical study

Adolescence and health

A central concept in the study is health, or actually ill-health. *Chapter 3* focuses on the concept of (ill) health and how to measure this, both overall and, in particular, for adolescents. In the case of the health of adolescents a conflict of perspectives is highlighted. On the one hand, there is the traditional assumption that adolescence and health are almost synonymous. On the other hand, researchers emphasise that this traditional view of healthy adolescents is at odds with the findings of various empirical studies. The findings of the present study support this second perspective: adolescence and health are *not* synonymous. Relatively high levels of experienced health complaints are observed, high levels of mental ill health, and one third of the study population reported a chronic illness. Another main finding is that female adolescents have more health problems and health complaints than male adolescents.

Socioeconomic health differences in adolescence

The relationship between socioeconomic status (SES) and health is examined in *Chapter 4*. The central hypothesis is that no relationships would be observed between the SES of the father and mother and the adolescent's health, since several foreign studies report that adolescence, in contrast to childhood and adulthood, is characterised by relative equality in health. Based on the conclusion of the previous chapter that gender differences in adolescence are manifest in respect of health problems, we also include gender in the analysis. The effects of both socioeconomic indicators (fathers' and mothers' educational level and occupational status) and the interaction-effect of these indicators with gender were tested on several self-reported health measurements.
The analysis revealed that no interactions exist between gender and SES on health. So, the relationships between SES and health are similar for males and females. Evidence from the present study mainly confirms the results from other countries showing that adolescence is characterised by little or no socioeconomic differentiation. So, in all, the hypothesis of little or no variation is confirmed. Despite this overall conclusion one exception is worth mentioning. This exception involves the relationship between the father's educational level and three health measurements. They are of interest due to the form of the observed relationship. Adolescents in the lowest and those in the highest educational group of the father reported most experienced health complaints, worst psychological health and worst mental health. Thus, only for these three health measurements and only for the educational level of the father, a relationship was observed. This relationship is, however, not linear, but U-shaped. Yet, in the main, the findings support the assumption that socioeconomic health differences do not exist in adolescence.
Chronic illness, a particular health indicator is the central theme of *Chapter 5*. We have already observed in the previous chapter that there is no evidence of socioeconomic health differences concerning chronic illnesses in adolescence. Chapter 5, however, changed focus and examined chronic illness as the independent variable. It was questioned whether adolescents with a chronic illness have a lower level of self-esteem. Besides, the influence of SES was investigated on the relationship between chronic illness and the level of self-esteem.
The findings show that male adolescents without a chronic illness have a significantly higher level of self-esteem than those with a chronic illness. Female adolescents have a significantly lower level of self-esteem than the males, but no association exists with having a chronic illness

for young females. In contrast with the previous chapter, where the educational level of the father was found to be the only significant SES indicator, now the educational level of the mother is the only significant SES indicator. For both male and female adolescents with and without a chronic illness, higher educational level of the mother is associated with a higher level of self-esteem.

Socioeconomic differences in health risk behaviour

In *Chapter 6*, we explored the relationship between SES and health risk behaviours. The central idea was that differences in health risk behaviours are the explanation for the transition from no socioeconomic patternings in health in adolescence to socioeconomic patternings of health in adulthood. Therefore, the hypothesis of latent differences is formulated, which expected socioeconomic differences in smoking, alcohol consumption, soft drug use and physical exercise. Latent differences are defined, in this context, as a combination of a lack of socioeconomic health differences, with the presence of differences in health risk behaviours.
The findings, however, show that the relationships between SES and health risk behaviours are not as linear as is often found in adulthood. Actually, our findings can be mainly characterised by the absence of a relationship between SES and health risk behaviours. The only exception applies to sports, which is linearly related to SES. Adolescents in lower SES groups engage in sport less than adolescents in higher SES groups. So, the hypothesis of latent differences is only confirmed for sports. For smoking, alcohol and soft-drugs consumption, the hypothesis of latent differences is rejected.
However, one interesting observation is made in respect of the father's occupational status. Adolescents in the lowest, the middle and the highest of the six occupational status groups have the highest rates of smoking and drinking. Thus, the form of these observed relationships is W-shaped. Another finding is that male adolescents showed higher rates of alcohol consumption and of drug use. For smoking and sports the patterns for males and females were almost similar. Males also scored higher on the combination of health risk behaviours than females.

Decision making styles, health risk behaviour and the influence of SES

Adolescence is a crucial stage in the development of decision making styles. These styles may play an important role in the onset of unhealthy behaviours. In *Chapter 7*, three questions are investigated by means of an instrument which measures decision making styles in adolescence, the Adolescent Decision Making Questionnaire (ADMQ). The ADMQ encloses five subscales, self-confidence, vigilance, panic, evasiveness and complacency. First, we examine whether the structure of these five subscales could be recognised in our study cohort. The relatively low Cronbach's alpha and low inter-item correlations of the subscales indicate that the subscales are not clearly present in the data. Both a Principal Component Analysis, Varimax rotated, on five components and a Simultaneous Component Analysis supported this idea. An adapted ADMQ is proposed, with four components, docile, panic, impulsiveness, and self-confidence, and 22 items. Eight items were omitted from the original ADMQ, based on their content, their low loadings and the increase of Cronbach's alpha by omitting the particular items.

The second question concerns the evaluation of the adapted structure of the ADMQ by a cross validation study. Three findings confirmed the improvement of the adapted ADMQ. First, each item fits in the intended subscale, with regards to content and loading. Second, both the Cronbach's alpha and the inter-item correlations of the adapted ADMQ subscales increased. Third, the cumulative explained variance increased.

Finally, this chapter concludes that the adapted ADMQ to be a convergent and discriminatively valid instrument. This conclusion was reached because the correlation coefficients of the four subscales with peer group pressure on the one hand, and the differences in scores on the four subscales between male and female adolescents on the other.

In *Chapter 8* we investigated the adapted version of the ADMQ as a predictor of health risk behaviour. We hypothesized that maladaptive decision making styles were stronger predictors of unhealthy behaviours in the lowest SES group, than in the higher SES groups. The hypothesis is formulated as the differential vulnerability hypothesis, since the central idea is that adolescents in the worst social circumstances will experience most impact of negative determinants in respect of unhealthy behaviour. Analyses reveal, however, no interactions between SES and decision making styles on unhealthy behaviours. Thus, adolescents in the low and in the high SES group are at equal risk of performing unhealthy behaviour as a consequence of maladaptive

decision making styles. Another finding is that both males and females in the lower SES groups have more maladaptive decision making styles and fewer adaptive decision making styles. Only one of the maladaptive decision making styles, impulsiveness, remains strongly related with health risk behaviour in the multivariate model. We conclude that an impulsive style of decision making can be seen as an important predictor, through unhealthy behaviour, in the re-emergence of socioeconomic health differences in adulthood.

Validity issues

So far, we have summarised the main findings of the thesis. The question is then, what conclusions can be drawn from these findings? However, before drawing conclusions, some validity issues should be considered. Both potential sources of bias and the generalizability of the results will be discussed below.

Potential sources of bias

Potential sources of bias refer to the quality of the results for the target population, i.c. a sample Dutch adolescents. The discussion of potential sources of bias will concentrate on: self-reported data, non-response, the selection of the measures used, and cross-sectional data.
The first potential source of bias involves the self-reported data. Self-reported data may be considered as a source of bias in terms of under- and over-reporting. However, in agreement with Spruijt-Metz (1996), if one is interested in subjective feelings of healthiness experienced by young people, it is evident that the young people themselves should be asked. Therefore, self-reported data are the most suitable data source in the present study, focusing on experienced health and health risk behaviour. Besides, some studies show that adolescents' self-report measures on behaviours, such as sweets consumption, is reliable (Høland et al 1985).
The second potential source of bias concerns non-response. In fact, the response in this study is very high (95%). The main reason for this high response is the cooperation of both the Public Health Services and the schools. The study involves thus a representative sample of adolescents attending regular secondary education. The 5% non-response is a random group of adolescents which are absent due to short sick leave, playing truant and other activities, such as school committees.

The third potential source of bias concerns the selection of the measures used. All the findings, of course, are only as good as the measures of health, health risk behaviour and socioeconomic status. The selection of health measures is complicated because of two main reasons. On the one hand, there is no consensus about the best indicators of health in adolescence, since this discussion is underplayed by assuming that adolescence and health are synonymous. On the other hand, standardised instruments assessing health among adolescents are not specifically available. In this study, the selection for health measures was guided by international literature. In future analyses, however, more attention should be paid to measures referring to psychosocial and developmental aspects, as being important indicators of adolescent health.
Everyday health-related behaviours are essential concepts in this study. These behaviours are mainly established in adolescence (Cobb 1992, Spruijt-Metz 1996). In this respect, smoking, alcohol, soft drug, and sport are proper selected behaviours. Also, because their known influence on future health and well-being (e.g. Raitakari et al 1995, Steptoe & Butler 1996).
Socioeconomic status is operationalised in this study as the educational level and the occupational status of both the father and the mother of the adolescent. The main reason for this choice was that the social position of the parents has its influence on several aspects in the life of an adolescent. We included both father and mother because it was argued in other studies that their influence may differ for health or behaviour (Lucht van der et al 1992, Pietilä et al 1995). As it transpired in the present study, when comparing all four SES indicators, the father's educational level was only one associated with some health measures, the father's occupational status with health risk behaviour, and the mother's educational level with self-esteem.
Notwithstanding the increasing importance of the school and the educational level of the adolescent, we choose the SES of the young person's parents, because this characterises the environment in which the adolescent is raised, with all its possibilities, restrictions, values and habits. Moreover, there is still a strong relationship between the SES of parents and the educational level of their children (Meeus & t Hart 1993, Dronkers & Graaf de 1995).
The final potential source of bias involves cross-sectional data. All empirical analyses in this thesis are based on cross-sectional data. The problem with this point is that the question arises: can an association between X and Y be explained as X causes Y? Properly speaking, cross-sectional data do not provide the possibility drawing conclusions in terms of causal associations. For example, the observed association

between decision making styles and health risk behaviour might be bidirectional (Chapter 8). However, the relationship between decision making styles and health risk behaviours might reflect an effect of decision making on behaviour rather than the reverse effect. It seems a priori more logical that an impulsive way of decision making effects the onset of smoking in adolescence than that smoking would change the decision making style. Longitudinal data of the study cohort would help to establish such causal effects.

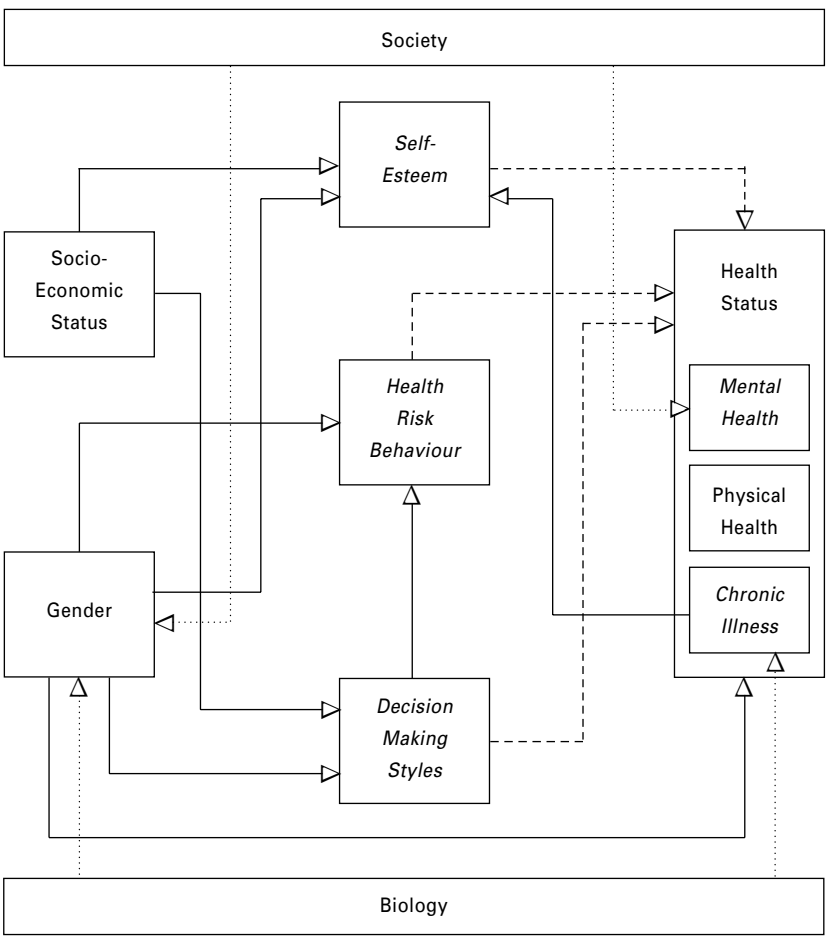
Generalizability

In this section we consider the generalizability of the conclusions. Some authors refer in this context to the external validity of the conclusions (i.e. Swanborn 1987). Can the results of the study be generalized to adolescents who have not been included in the sample?
The conclusions of our study cannot automatically be generalised to the population Dutch adolescents as a whole. Two remarks can be made with respect to possible omissions of certain groups in the sample. First, we restrict in our study to those adolescents who attend regular education. For this population, a representative sample is realised, because of the advantages of the sampling-procedure at school-level, among which the high response rate. The restriction to adolescents attending regular education means the exclusion of institutionalised adolescents and severe (chronically) ill adolescents. This concerns, however, a very small group of adolescents. In 1994-1995 only 3% of the Dutch adolescents of 16 years old attended special secondary education (SCP 1996). Second, our sample differs from the urbanized regions in the West of the Netherlands concerning the percentage of ethnic minorities. Less than 5% of the sample belongs to an ethnic minority. In the four big cities in the West of the Netherlands, Amsterdam, Rotterdam, Den Haag and Utrecht, this percentage is much higher. For example, almost 30% of the primary schools in these four cities were in 1994-1995 labeled as a 'black school' (Tesser et al 1995). Van der Wal (1997) concentrated in his thesis on ethnic differences in health in children. The general assumption is that the health of immigrant children is worse than the health of indigenous Dutch children. Van der Wal concluded that this general assumption is more complex than mostly presumed. In all, the findings of Van der Wal indicate that the low percentage of ethnic minorities in our sample does not distort the overall findings.

General discussion and implications for the model

Thus far, we have summarised the main findings of this thesis and discussed some validity issues of these findings. The question is then, what answers can be given to the three general research questions, and what are the consequences of these answers for the conceptual model depicted in Chapter 1?

Figure 1 Proposed theoretical model of Health in Adolescence



observed relationships
discussed relationships
future research
cursive possibilities for interventions

Research question 1

The first general research question concerns the prevalence of health problems in adolescents. The study finds that adolescent and health are not synonymous. Indeed, the findings show remarkably high levels of self-reported health problems as indicated by measures of absence of health. Only a minority of adolescents report no experienced health complaints (11%). While 43.5% often feel tired and 44.6% of adolescents generally get up in the morning feeling tired and unrested. Most of the reported health problems concern psychosocial health, with physical health status mainly good, or even very good. Chronic illnesses are also reported frequently. More than one third of the adolescents report at least one chronic illness. Asthma, hay fever and skin diseases are, in this respect, the three most commonly reported conditions.
The two main observed health problems in adolescents, chronic illnesses and mental health problems, can be located within the discussion concerning biological programming versus social programming of ill health (Barker 1991, Vågerö & Illsley 1995). The high prevalences of chronic illness may refer to the biological constitution of adolescents, and the high percentage of mental health problems of adolescents may refer to their position in society. Several changes in society over the last decades place adolescents in very vulnerable position in society (Schuyt 1995). This vulnerable position can affect their mental health.
Adolescents themselves are also uncertain and doubtful of their position. Society offers adolescents less opportunity to make transition into adult status, since the process of obtaining a position is nowadays less obvious than it used to be, when rituals of transitions used to be culturally anchored. Transitions are nowadays vague and delayed. Both the productive and reproductive tasks of adolescents are now very delayed in society (Schuyt 1995). This leads to a discrepancy in Western countries between adolescents' abilities and their responsibilities.
Furthermore, adolescence is a developmental period marked by rapid physical, emotional, cognitive and social changes. These changes occur in a society with complex processes of freedom and restrictions. On the one hand, society offers adolescents a lot of freedom and alternatives to choose. Many alternatives exist in school careers, in jobs, and in realisation of life. Adolescents have also more freedom in terms of their leisure time, which is due to fewer demands and responsibilities in the family, and in society (Schuyt 1995). On the other hand, however, these freedoms and opportunities are relative. Modern society pressures young people to make well-considered choices. These choices need to be accurate and to the point, because there is less credit to see around.

Also, peer group pressure shines another light on freedom of choice. The influence of the peer group concerning, for example, the onset of health risk behaviour appears to be very strong (Flay et al 1994, Bahr et al 1995).

Research question 2

The second general research question concerns testing the hypothesis of very little or no socioeconomic health differences in Dutch adolescents. The study supports the hypothesis that health and ill health are equally distributed over the social classes in adolescence. Thus, socioeconomic status plays a very modest role in (ill) health in adolescence. How is it possible that the well-established socioeconomic patterning in health in childhood and in adulthood differs that much from adolescence? Three possible responses can be made to this question.
The first suggestion involves the time delay in the effects of determinants of health on health. These effects are visible in younger children, because young children are particularly vulnerable (West 1988). Once childhood has been negotiated, there will follow a period in which the effects of SES are very minor. These effects are again manifest in adulthood, when the negative impact of unhealthy behaviour, stress, ineffective coping styles, poor living and working conditions has lasted long enough to affect health. For example, health risk behaviour such as smoking or alcohol consumption, are developed in adolescence but typically have delayed effects in terms of chronic morbidity and mortality.
The second suggestion concerns health selection. Unhealthy adolescents are equally distributed over the several social classes. However, selection suggests that less healthy young people experience more downwards social mobility. Adolescents, for example, with a chronic illness may experience its negative consequences in terms of school career and job finding. Those with the worst health conditions attain the lower SES positions. Especially in the period between entry into the labour market and the achievement of a stable occupational role, health selection might have a lot of impact. Interesting, though, in respect of this suggestion of health selection is the possibility of its differential effect for the several SES groups. Perhaps adolescents in the higher SES groups have compensating mechanisms for the negative effects of a chronic illness. Although, the findings showed little support for differential mechanisms for the several SES groups, since we observed no interaction effects. Still, more generally, suggestions are postulated concerning different mechanisms which link SES and health between social strata (Stronks 1997, Marmot et al 1997).

The third suggestion on the question how a well-established pattern in adulthood differs that much from adolescence, involves the idea that SES is no longer good indicator to characterise and understand the social position of a person (Tax 1982). Society has become more open (Dronkers & Ultee 1995). Tax (1982) postulated concepts as self-directed versus conformistic' mentality, c.q. attitudes and orientations as being more important characteristics of a person's position in society than SES. Some societal processes overruled the impact of SES, also in adolescence. Huge comprehensive schools, for example, replaced the small and local schools. So, many adolescents have to travel longer distances to attend school, and mix many different contemporaries. In addition, society changed, strongly influenced by mass media, in the direction of direct satisfaction of the needs'. It was no longer reserved for the high SES groups to possess many things. Furthermore, social control changed. Informal social control gave way to several forms of formal social control. The neighbourhood, families, and strong social traditions were replaced by bureaucracy, computer lists and Sofi-numbers (Schuyt 1995).

Research question 3

The third general research question concerned the socioeconomic patternings of intermediate factors in adolescence, as being possible preludes of the re-emergence or increase of SEHD in adulthood. The overall conclusion is that no relationships exist between SES and smoking, drinking and soft-drug use. The combination of smoking, drinking and soft-drug use is unrelated to SES. This different picture in adolescence, compared to adults, might be complicated by several age-specific influences, including those arising from the school context and youth (sub)culture involvement, which have the potential for cutting across social class (West 1988). Adolescence is a period of experimenting with behaviours, apparently across social classes. Interesting, however, in this respect, is the notion that this period of relative equalisation is essentially temporary since by early adulthood a class differential in smoking is established (Pietilä et al 1995, Stronks et al 1997). A plausible explanation for this transition of no socioeconomic differences in risk behaviour in adolescence into socioeconomic differences in risk behaviour in adulthood is that adolescents in the higher SES groups experiment temporarily with unhealthy behaviours and that these behaviours are more persistent in the lower SES groups (Pietilä et al 1995).

Conversely to the overall picture that health and health risk behaviours have little associations with the effect of SES, some exceptions have been found and are worthwhile mentioning. Socioeconomic differences have been observed concerning mental health, self-esteem, impulsive decision making and sport. All these exceptions have in common that they refer to psychosocial aspects. Physically no problems exist and society is open so that everybody has equal chances to gain optimal physical health and to experiment with health risk behaviours. However, for social-emotional development the differential impact of SES is still noticeable. Lower SES is associated with lower levels of self-esteem and with impulsive ways of making decisions.
Sport appears to be an exception in this respect, but plays also an important role in the social-emotional development of adolescents. Team sports for example provide adolescents clear rules, tasks and roles in their uncertain period of life. Positions are clear and everybody has well-defined responsibilities. Besides this clarity, sport offers the possibility of release. Sport suites thus very well in the psychosocial aspects which are related to SES in adolescence.

Research question 4

The fourth and additional conclusion, having reference to all three general research questions, concerns the crucial role of gender in the conceptual model of health in adolescence. Many differences exist between male and female adolescents. Female adolescents report more ill health. Despite the consistent pattern of more health problems in females than males, its origins are still uncertain. Even more uncertain in this respect is the 'reversal of fortune': "higher male rates (.. of ill health..) in childhood are replaced by higher female rates which emerge in early-mid adolescence" (Sweeting 1995). Explanations were raised to explain these reversals of fortune, varying from a relative lowering of female self-esteem, physical changes of puberty, together with greater perceived stresses and the differential societal expectations for females in comparison with males.
The differences between males and females involve not only health problems, but also self-esteem, health risk behaviour and decision making styles. The picture that we get from such differences is that females have harder tasks in growing up than males. We found that females exhibit less health risk behaviour, have lower self-esteem, are less self-confident in decision making, have higher levels of panic in decision making, but also lower levels of docility and impulsiveness. Partly it

can be ascribed to the fact that females mature earlier than males, both biologically and culturally. Female adolescents judge their societal responsibilities differently. From a biological point of view, the extra x-chromosome of women is the essence of gender differences. Sociologists and psychologists emphasise the different, c.q. inferior position of women in society and mention the gender-specific socialisation as the main reason for the existing gender differences. Vereijken and Bauduin (1992) reviewed two possible and interacting explanations for existing gender differences. Firstly, the Vulnerability Theory states that gender specific socialisation makes females emotionally less stable, provides them less self-esteem, and makes them more dependent of others. Besides, socialisation legitimates females to express feelings and symptoms more than males. Secondly, the Burden Theory emphasises the difficult position of females in society. Females are exposed to extra stress because of complex combinations of roles and conflicting expectations. Both theories can be easily applied to the transitions during the developmental stage of adolescence, and in particular, for female adolescents.

Implications for future research

In this final chapter, in summarising and discussing the findings of the present study, we have identified several pieces of important gaps in our knowledge regarding health in adolescence, the absence of socioeconomic health differences in adolescence, and their re-emergence in later life. From these, suggestions will be given for future research in the section below concerning both a follow-up study and additional cross-sectional analysis.

In the first place, a general recommendation of future research is a follow-up study of a cohort of adolescents into young adulthood. A follow-up of our study cohort in about three years would provide essential information to answer questions which are as yet unresolved. Five main questions will be outlined below.
The question as to whether, and how, the adolescent pattern -of no SEHD- might transform into the adult pattern within such a relatively short period of time is, of course, a central focus of the follow-up which cannot yet be answered. It would be very interesting to investigate whether the few observed socioeconomic differences in mental health increase, decrease or stabilize. And, in addition, are these differences in mental health being substituted or supplemented in young adulthood by socioeconomic differences in physical health?

Health selection can be tested by a longitudinal design. Following, for example, adolescents with chronic illnesses would provide insight into processes of health selection in the period after leaving secondary school. In the transition of adolescence into young adulthood the effects of direct and indirect selection would become clear via educational achievement and occupational trajectories. Another interesting question in this respect is the possibility of differential impact of health selection in the low versus the high SES groups. It is argued that higher SES groups have compensating mechanisms in order to buffer the negative consequences of having a (chronic) illness (Echebarría Echabe et al 1992, Smith & Carlson 1997)

Following naturally from the previous suggestion of compensating mechanisms the buffer hypothesis should be elaborated and tested. The buffer hypothesis supposes that favourable social surroundings, c.q. a high SES, and accompanying compensation mechanisms provide a buffer for young people against health damaging effects of unhealthy lifestyles (Blaxter 1990, Kooiker & Christiansen 1995). Favourable social circumstances may thus be considered a buffer: "it involves access to resources, resources that help individuals avoid diseases and their negative consequences through a variety of mechanisms" (Link & Phelan 1995). Behavioural sciences use the buffer concept mainly in relation to stress. The stress theory contains factors that buffer against the effects of stress on (mental) health, such as coping resources, coping strategies and social support (Thoits 1995). In spite of recent extensive research into these three separate buffers it still is not clear what mechanisms are behind the buffering. A very promising concept in this respect is Antonovsky's 'sense of coherence', SOC (Antonovsky 1987). It installs an understanding about the way in which favourable social circumstances can create a buffer against illness and its negative consequences. Favourable social circumstances promote the development of a strong SOC and a strong SOC functions as an all encompassing buffer. Not in terms of an unpassable wall, but in terms of canalisation and manageability (Sagy & Antonovsky 1990, Guthrie et al 1994).

A follow-up study would provide the opportunity to elaborate and investigate the socioeconomic patterns of unhealthy behaviour in the transition of adolescence into adulthood. Would longitudinal data support the assumption that adolescence is only a temporary period of relative equalisation of health risk behaviour? Is the pattern of socioeconomic differences in, for example, smoking, already re-emergent in young adulthood? Investigation of stability or changes in health risk behaviours in adolescence would help to resolve many still unanswered questions.

An interesting question to elaborate is the notion of a cohort effect on socioeconomic health differences in adolescence. The fact that we mainly found no socioeconomic pattern in adolescence for both health and health risk behaviour could suggest a cohort effect. A cohort effect for health differences in adolescence implies that the life experiences and conditions of those born in approximately 1977 have been such as to reduce the inequalities of an earlier era. These would have to have improved more and greater in the lower socioeconomic strata compared with the higher. To be a complete explanation, however, we would have to make the assumption that there will be little or no socioeconomic differences in health and in health risk behaviour among the youth cohort when they reach the age of 25, for example. An interesting question for a follow-up would be: "Is the pattern found in adolescence stable or will it change when this cohort gets older?".

In the second place, further analysis of the cross-sectional data, and comparisons with earlier and international studies can be suggested for future research. Four suggestions will be mentioned below.
The high prevalences of health problems in adolescence health require further research. On the one hand the high prevalences of chronic illnesses need attention. Although prevalences vary in the literature from 5% till over 30% (Newacheck & Stoddard 1994), the suggestion exists that these prevalences increased lately. Hirasing et al (1995), for example, found that 21% of schoolchildren at primary education suffered from one or more chronic illness, according to the parents. Future research should investigate whether the prevalences increase, and what its origins are. On the other hand, the notion exists that mental health problems in young people increase, as being the 'new morbidity' (Schulpen 1997). Monitoring youth cohorts deserves attention in analysing trends in mental health problems, their origins, and the possibilities to improve mental health in adolescence.
Future research is also needed to unravel the relevance and meaning of gender differences. These differences are consistently reported in the literature and are replicated in the present study. Several possible explanations are mentioned, varying from biological, cultural and psychosocial factors. All are plausible to some extent, although much is still unknown about the impact, the mechanisms, and the interrelationships of these three explanatory domains.
Gender differences in health and determinants of health can also be considered within the historical context of emancipation that has gone on in the Netherlands since the sixties. Studies of this process show that some differences between males and females have disappeared, but

others still exist (Meeus & 't Hart 1993, Spruijt 1993). Theoretically it would be interesting to elaborate the position of health, well-being and health related behaviour in this historical process of emancipation. Is the contradiction between the ideal of equity on the one hand, and still exisiting conflicting expectations on the other, associated with higher levels of mental health problems in female adolescents?
Another interesting point for future research is the relative impact of parents and peer group on health and determinants of health in adolescence. The relationship between the SES of the parents and the health and determinants of health of the adolescent have been extensively discussed in this thesis. Future analysis could be conducted to examine the relative impact of the parents, peer group and individual characteristics on health and especially on health risk behaviours. In the present field of research the decreasing influence of the parents is relevant in combination with the increasing influence of the peer group. It would be a wrong assumption, however, to say that the overall influence of parents diminishes (Meeus & 't Hart 1993). The 'terrain hypothesis' assumes that the influences differ per terrain for parents and peer group (Meeus & 't Hart 1993). For example, parents still have a strong influence on the general well-being of adolescents. The peer group has no influence on this terrain. On the other side, the peer group appears to have an impact on the relational identity of the adolescent while the parents have not. Future research could highlight whether terrains can be distinguished in health and health behaviours where different influences exist for parents and peers.
International comparisons show that interrelationships between health variables and lifestyle variables are very similar between countries (King et al 1996). In addition, the present findings of a lack of socioeconomic health differences in adolescence agrees with studies in other Western European countries. But it is not known whether these differences exist in adolescence in Eastern European countries. Therefore, a comparable study has started recently in Slovak examining socioeconomic health differences in adolescence.

Lastly, the reduction of socioeconomic health differences is the main motive for conducting descriptive and explanatory studies on this topic. Very few interventions on reducing SEHD, however, focus on adolescents (Gepkens & Gunning-Schepers 1996). While adolescence was found to be a particularly applicable period for interventions involving health education (Spruijt-Metz 1996). Properly designed evaluation studies will highlight the effectiveness of interventions in adolescence. In the final section of this chapter, some suggestions for interventions will be discussed.

Policy implications

Information for interventions

An important motivation for conducting the present study was the ambition of governmental policies to reduce socioeconomic health differences (SEHD). The study would, in that respect, provide useful information for the content of interventions during adolescence to restrict the re-emergence of health differences. However, before formulating suggestions for interventions, we will consider two issues, namely the unfairness of these differences and their avoidability (Gunning-Schepers 1991). Both are elaborated by Stronks and Gunning-Schepers (1993). The first issue can be questioned as: why is it necessary to have a policy aiming to reduce SEHD? And the second issue as: what possibilities exist to achieve this reduction?

The necessity for the policy to attempt equality in health is mainly justified as equal opportunities to achieve health. Consequently, it should be possible to determine which health inequalities may be considered as unjust and unacceptable. Stronks and Gunning-Schepers concluded that "Therefore only inequalities resulting from an unequal distribution of opportunities to be as healthy as possible, to the extent that this distribution can be controlled, must be conceived as inequities" (1993).

The possibilities to achieve equity in health are numerous, since scientific evidence on possible causes of SEHD became available (Gunning-Schepers 1994). However, also some dilemmas are involved. One important dilemma of possible interventions on determinants of SEHD is the free choice of individuals. Most of the ongoing interventions involve health education, and try to change unhealthy behaviours (Gepkens & Gunning-Schepers 1996). The crucial point here is if these are determined by free choice or not.

Many people think that lifestyles and behaviours are always a matter of free choice. However, the knowledge about the health risks of certain lifestyles appears to be unevenly distributed. Furthermore, there are structural limitations to the freedom of choice, for example, the price of a membership of a sporting club. Moreover, the social environment plays an important role in respect of the free choice of behaviours. Especially in adolescence peer group pressure should be considered in respect of free choice. The influence of the peer group concerning the onset of health risk behaviour appears to be very strong (Flay et al 1994, Bahr et al 1995).

Having considered the issues of unfairness and avoidability, the question is then whether the findings of our study provide useful information for interventions in adolescence, in order to weaken the re-emer-

gence of socioeconomic health differences? It is likely that much of the avoidable SEHD are caused by the unequal distribution of known determinants of health (Gunning-Schepers 1994).

Two main areas for interventions are suggested, following the conclusions of the study. The first area concerns sport, the second involves a so-called empowerment focus (Whitehead 1995).

The first suggestion concerns undoubtedly sport. Sport was found to be the only health-related behaviour to be linearly related with socioeconomic status. Adolescents in the lowest SES groups are less engaged in sport. These groups should be stimulated and facilitated to participate in sport, in order to gain health profit. Recently, a discussion has been going on about the relationship between sport and health. Since then, both scientifically (Blair 1996, Mosterd et al 1996) and in public health policy (VWS 1996) it is recognised that engagement in sport is a determinant of health. Mosterd et al (1996) concluded that sport activities positively affect both physical and psycho-social functioning of people. Also, the government emphasises the importance of sport in a special report on sport policy (VWS 1996). A special target area in this report is the increase of sport among youth, both in schools and in their leisure time. Not only its positive consequences on health and well-being, but also its consequences for participation in society are recognised. Methods derived from sport provide vulnerable and problem youth with tools to participate in wider society (Schuyt 1995).

These ideas are not entirely new. Several cities have started with some local experiments to increase the sport activities as leisure time activity in youth. An example is the municipality of Emmen, in the South East of Drenthe of the Netherlands. In this municipality, a project has been started to improve sport activities in youth in the low SES quarters of the city. Trainers from sporting clubs provide lessons during regular sport lessons at school, and free training-lessons are provided during the holidays. In this experiment the local government pays the fees of sporting clubs for youth in the lowest SES groups. This kind of initiative of local policy should be attended with an evaluation study.

The second main suggestion for interventions in adolescence is centred on a so-called empowerment focus (Whitehead 1995). Such interventions are aimed at learning adolescents social skills and at improving their mental health. The present study provided evidence that this kind of intervention could be necessary for adolescents in the lower SES groups, since they have lower levels of self-esteem, higher levels of impulsive decision making, and higher prevalences of mental health problems. Several interventions in youth have already shown that social skills and problem solving styles are changeable. In the context of

the Programm Committee on Determinants of Health (Programmacommissie Determinanten van Gezondheid 1990) three interesting interventions were implemented and evaluated in youth. Two interventions focused on adolescents, on their social skills (Bijstra et al 1994) and on a reduction of depression (Ruiter et al 1995, Veltman et al 1996). The third intervention focused on children of ten and eleven years old. Three reaction styles, or problem solving strategies, were offered on specific situations, an aggressive, passive and active style (Meijden van der & Geelen 1995).
A lack of social skills and problem solving strategies might limit adolescents in the lower SES groups to alter their health risk behaviour were this has been hypothesised as a reason for the re-emergence of socioeconomic differences in health risk behaviours in adulthood. The findings of the present study supports this idea, since we found that adolescents in lower SES groups have more maladaptive decision making styles and fewer adaptive decision making styles.
Both of the suggestions mentioned above address causation mechanisms of SEHD. Another focus in weakening the re-emergence of SEHD after adolescence could be the selection mechanism. SEHD due to health selection processes are unavoidable to a certain extent. For example, those born severely disabled will seldom have the opportunity to achieve the benefit of education, income or occupation which determine SES. However, for those with less severe illnesses the impact of ill health on the school career of young people should be minimised. Advise the young person's school career is therefore relevant. For example, adolescents with asthma should be told that some occupations are better not to choose due to their health. One can imagine that selection has a differential impact. Especially adolescents in the lower SES groups may be particularly affected by their ill health in terms of school career and work. This group of adolescents should carefully be guided in their choices of jobs. In addition, many of the social insurance benefits will determine the extent to which the SES of those who become ill over a life time is affected by their illness (Gunning-Schepers 1994).
Finally, a completely different approach was mentioned by Vågerö (1995). He stated that the primary goal of public health is finding new ways of improving public health. Then it is conceivable that some health differences are more important than others. Gender differences for instance, in the light of the conclusion of the present study, represented greater potential to improve an adolescent's health than do socioeconomic differences. Thus in respect of reducing inequalities in health, one can suggest interventions to improve the psychosocial well-being of female adolescents.

The minimum which could be expected from the Ministry of Public Health, in order to pursue their central aim to improve the health status of people in the lower strata, is to guarantee equal access to health care services and good quality services for all socioeconomic groups. Both principles are actual topics of discussion for the future public health policy in which the incompatibility of solidarity and the introduction of marked-base elements play leading roles (Gerritsen & Linschoten van 1997).

In addition, public health policy should promote intersectoral actions, since these are important in view of the multifactorial causes and consequences of SEHD. The quality and safety, for example, of living circumstances and school environments should have a consequent place on the agenda of health policy. In addition, other policy fields, for example, education and physical planning, should place health on their agenda. The problem, however, is that these policy fields have other primary goals (Gunning-Schepers 1994).

Finally, one specific organisation is particularly concerned with public health of youth in the Netherlands, Youth Health Care (YHC). At present Youth Health Care (YHC) in the Netherlands is an organisation in transition. One of the central topics of discussion is whether, and if yes, to what extent, Preventive Health Screening's (PHS) should be conducted in individual children and adolescents. In 1995 a national recommendation was formulated to conduct two PHS's in children during primary education and one for adolescents in the second grade of secondary education (LVGGD 1995). The executive part of the PHS's, however, varies between YHC's (Geenhuizen van et al 1997).

The transitions in the YHC are caused by several developments inside and outside this field of public health. In the first place, infectious diseases have been replaced by psychosocial problems and chronic illnesses. In addition, methods of primary prevention have changed from biological towards behavioural medicine and a lifestyle perspective. Next, decentralisation has made local bodies responsible for YHC, which has increased variation per region.

The variation per region was also one of the main conclusions of a recent evaluation of the quality of the YHC (Geenhuizen van et al 1997). For sub-divisions of care, this is an advisable development, since specific collective prevention should be attuned to the needs of the local population. Cooperation with other health care organisations plays an important role here. However, besides the variation per region, the YHC requires a general standard programme. Different ideas exist

about the content of such a standard programme, ranging from a continuation of the present policy to a complete change towards a risk group approach. This suggests a compromise between a general standard programme and facultative per YHC specific actions or modules depending on risk groups and regional need. (Pijpers & Meulmeester 1996, Spreeuwenberg 1996).
Epidemiological research is essential in this final approach. The YHC monitors and signposts, by means of questionnaires, health problems and behavioural problems in youth. This provides information for specific programmes, executed in cooperation with other specialized health care organisations. For the target group of the present study, two actions are important. First, that results of questionnaire surveys should lead to collective programmes. The results, for example, of the questionnaires in the present research group could lead to an intervention programme on the improvement of mental health. The YHC signalises high percentages of mental ill health, traces possible interventions and organises a collective intervention programme for the fourth grade pupils. Second, consulting hours of a nurse or a doctor during school enables adolescents to ask for individual support. Both on their own initiative, but also on initiative of teachers, these young people may visit during these consulting hours. These consulting hours should be very frequently in order to increase the accessability and to decrease the threshold.